

THAT WHICH IS CLAIMED IS:

1 1. A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 applying said plurality of laser beam shots to the eye in a manner that is
6 based in part on the optical path difference between the plane wave and the wavefront
7 emanating from the eye; and
8 removing tissue from the cornea of the eye in a manner that reduces the
9 optical path difference between the plane wave and the wavefront emanating from the
10 eye; whereby visual defects of the eye are reduced.

1 2. The method of claim 1 in which the size of a laser beam shot is less than
2 about 1 mm.

1 3. The method of claim 1 in which the size of a laser beam shot is less than
2 about 0.5 mm.

1 4. The method of claim 1 in which the size of the laser beam shots varies.

1 5. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1 6. The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having about 20/20
3 vision.

1 **7.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having better than 20/20
3 vision.

1 **8.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 **9.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 **10.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 **11.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having better than 20/20
3 vision.

1 **12.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 **13.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 **14.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **15.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having better than 20/40
3 vision.

1 **16.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **17.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **18.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **19.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having better than 20/20
3 vision.

1 **20.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **21.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **22.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **23.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having better than 20/20
3 vision.

1 **24.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **25.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **26.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.

1 **27.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having better than 20/40
3 vision.

1 **28.** The method of claim 1 in which the vision of the eye is enhanced from an
2 eye requiring a correction of greater than 8 diopters to an eye having at least 20/20
3 vision.

1 **29.** A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 mechanically removing the epithilium of the eye to expose bowmans
6 membrane;

7 applying said plurality of laser beam shots to the bowmans membrane in a
8 manner that is based in part on the optical path difference between the plane wave and
9 the wavefront emanating from the eye; and,

10 said plurality of laser beam shots removing tissue from the eye in a
11 manner that reduces the optical path difference between the plane wave and the
12 wavefront emanating from the eye; whereby the vision of the eye is improved.

1 30. The method of claim 29 in which the size of a laser beam shot is less than
2 about 1 mm.

1 31. The method of claim 29 in which the size of a laser beam shot is less than
2 about 0.5 mm.

32. The method of claim 29 in which the size of the laser beam shots varies.

33. The method of claim 29 in which the vision of the eye is enhanced from
an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

34. The method of claim 29 in which the vision of the eye is enhanced from
an eye requiring a correction of greater than -3 diopters to an eye having about 20/20
vision.

1 35. The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having better than
3 20/20 vision.

1 36. The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 **37.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 **38.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 **39.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having better than
3 20/20 vision.

1 **40.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 **41.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 **42.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **43.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having better than
3 20/40 vision.

1 **44.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **45.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **46.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **47.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having better than
3 20/20 vision.

1 **48.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **49.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **50.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **51.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having better than
3 20/20 vision.

1 **52.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **53.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **54.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.

1 **55.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having better than
3 20/40 vision.

1 **56.** The method of claim 29 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20
3 vision.

1 **57.** A method for enhancing vision in an eye, the method comprising:
2 determining an optical path difference between a plane wave and a
3 wavefront emanating from an eye;
4 producing a plurality of laser beam shots;
5 displacing a portion of the eye to expose the stroma of the eye;
6 applying said plurality of laser beam shots to the exposed stroma in a
7 manner that is based in part on the optical path difference between the plane wave and
8 the wavefront emanating from the eye;
9 said plurality of laser beam shots removing tissue from the eye in a
10 manner that reduces the optical path difference between the plane wave and the
11 wavefront emanating from the eye; and,
12 replacing the displaced portion of the eye; whereby the vision of the eye is
13 improved.

1 **58.** The method of claim 57 in which the size of a laser beam shot is less than
2 about 1 mm.

1 **59.** The method of claim 57 in which the size of a laser beam shot is less than
2 about 0.5 mm.

1 **60.** The method of claim 57 in which the size of the laser beam shots varies.

1 **61.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1 **62.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having about 20/20
3 vision.

1 **63.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having better than
3 20/20 vision.

1 **64.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10
3 vision.

1 **65.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1 **66.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having about 20/20
3 vision.

1 **67.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having better than
3 20/20 vision.

1 **68.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10
3 vision.

1 **69.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1 **70.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having about 20/40
3 vision.

1 **71.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having better than
3 20/40 vision.

1 **72.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20
3 vision.

1 **73.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1 **74.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having about 20/20
3 vision.

1 **75.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having better than
3 20/20 vision.

1 **76.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10
3 vision.

1 **77.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1 **78.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having about 20/20
3 vision.

1 **79.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having better than
3 20/20 vision.

1 **80.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10
3 vision.

1 **81.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1 **82.** The method of claim 57 in which the vision of the eye is enhanced from
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40
3 vision.